

DEPARTMENT OF TRANSPORTATION

DES-OE MS #43
1727 30TH Street, 2ND Floor
Sacramento, CA 95816



**** WARNING ** WARNING ** WARNING ** WARNING ****
This document is intended for informational purposes only.

Users are cautioned that California Department of Transportation (Department) does not assume any liability or responsibility based on these electronic files or for any defective or incomplete copying, excerpting, scanning, faxing or downloading of the contract documents. As always, for the official paper versions of the bidders packages and non-bidder packages, including addenda write to the California Department of Transportation, Plans and Bid Documents, Room 0200, P.O. Box 942874, Sacramento, CA 94272-0001, telephone (916) 654-4490 or fax (916) 654-7028. Office hours are 7:30 a.m. to 4:15 p.m. When ordering bidder or non-bidder packages it is important that you include a telephone number and fax number, P.O. Box and street address so that you can receive addenda.

September 26, 2003

04-SF-80-13.2/13.9
04-0120F4
ACBRIM-080-1(095)N

Addendum No. 13

Dear Contractor:

This addendum is being issued to the contract for construction on State highway in SAN FRANCISCO COUNTY IN SAN FRANCISCO FROM 0.6 KM TO 1.3 KM EAST OF THE YERBA BUENA TUNNEL EAST PORTAL.

Submit bids for this work with the understanding and full consideration of this addendum. The revisions declared in this addendum are an essential part of the contract.

Bids for this work will be opened on October 21, 2003.

This addendum is being issued to set a new bid opening date as shown herein and revise the Project Plans, the Notice to Contractors and Special Provisions, and the Proposal and Contract.

Project Plan Sheets 410, 458, 523, 567, 579, 624A, 721, 739, 829, 838, 839, 840, 841, 860, 861, 862, 863, 936, 986, 987, 988, 994, 995, and 996 are revised. Half-sized copies of the revised sheets are attached for substitution for the like-numbered sheets.

Project Plan Sheets 841A, 841B, 841C, 841D, 841E, 841F, 841G, and 841H are added. Half-sized copies of the added sheets are attached for addition to the project plans.

In the Special Provisions, Section 2-1.06, "BIDDERS COMPENSATION," is revised as attached.

In the Special Provisions, Section 5-1.075, "BUY AMERICA REQUIREMENTS," in the third paragraph, Item C is revised as follows:

"C. Tower Saddle"

In the Special Provisions, Section 5-1.12, "PROJECT INFORMATION," subsection "INFORMATION HANDOUT," subsection "District Materials Information," at the end of the section, the following items are added after "Item F. Soil samples and rock cores":

- "G. USCG License DTCG-Z71111-03RP-002L, Amendment No. 1, Maintenance & Logistics Command Pacific.
- H. Plot Map titled, "Pier 7- Area for Contractor's Use"
- I. Sample Pier 7 Occupancy Agreement "

In the Special Provisions, Section 5-1.27, "PAYMENTS," in the sixth paragraph, Item D is deleted.

In the Special Provisions, Section 5-1.27, "PAYMENTS," in the sixth paragraph, Item E is revised as follows:

"E. Seismic Joint"

04-SF-80-13.2/13.9
04-0120F4
ACBRIM-080-1(095)N

In the Special Provisions, Section 5-1.29, "PHOTO IDENTIFICATION SYSTEM," in the first paragraph, the second sentence is revised as follows:

"The contractor shall submit a database record of every person contemplated to work on the project jobsite, including the employees of the subcontractors, vendor and suppliers."

In the Special Provisions, Section 10-1.02, "WATER POLLUTION CONTROL," subsection "STORM WATER POLLUTION PREVENTION PLAN PREPARATION, APPROVAL AND AMENDMENTS," the fourth paragraph is revised as follows:

"No later than 20 days after contract approval or six months prior to beginning work having potential to cause water pollution, whichever is later, the Contractor shall submit 5 copies of a complete draft SWPPP to the Engineer. The Engineer will have 50 calendar days to submit the SWPPP to regulatory agencies for plan review and to review the SWPPP. If revisions are required, as determined by the Engineer, the Contractor shall revise and resubmit the SWPPP within 15 working days of receipt of the Engineer's comments. The Engineer will have 15 working days to review the revisions. Upon the Engineer's approval of the SWPPP, 4 approved copies of the SWPPP, incorporating the required changes, shall be submitted to the Engineer. In order to allow construction activities to proceed, the Engineer may conditionally approve the SWPPP while minor revisions are being completed. In the event the Engineer fails to complete the review within the time allowed, and if, in the opinion of the Engineer, completion of the work is delayed or interfered with by reason of the Engineer's delay in completing the review, the Contractor will be compensated for resulting losses, and an extension of time will be granted, in the same manner as provided for in Section 8-1.09, "Right of Way Delays," of the Standard Specifications."

In the Special Provisions, Section 10-1.03, "TURBIDITY CONTROL," the seventh paragraph is revised as follows:

"No later than 20 days after contract approval or six months prior to beginning work in marine environments, whichever is later, the Contractor shall submit, for review and approval by the Engineer, a Turbidity Control Plan for all work that has the potential to cause turbidity. The Contractor shall allow 50 calendar days for the Engineer to review and approve the plan. If revisions are required, as determined by the Engineer, the Contractor shall revise and resubmit the plan within 15 working days of receipt of the Engineer's comments and shall allow 15 working days for the Engineer to review and approve the revisions. The Turbidity Control Plan shall describe equipment used to do work that has the potential to cause turbidity, operation schedule, deployment of turbidity control measures and containment contingency. Plans and working drawings shall be submitted in accordance with "Working Drawings" of these special provisions. Three copies of the plan shall be furnished to the Engineer initially with equal copies furnished following subsequent revisions and updating. Final approval of the plan will be subject to field testing. The Contractor shall demonstrate that the proposed turbidity control measures work as intended under actual working and field conditions. At the time of approval, the Contractor shall incorporate the turbidity control plan into the approved SWPPP via the established amendment process as described within "Water Pollution Control" of these special provisions."

In the Special Provisions, Section 10-1.11, "PROGRESS SCHEDULE (CRITICAL PATH METHOD)," subsection "BASELINE SCHEDULE," in the first paragraph, the first sentence is revised as follows:

"Within 90 days, after approval of the contract, the Contractor shall submit to the Engineer a Baseline Project Schedule including the incorporation of all comments provided to the Interim Baseline Schedule."

04-SF-80-13.2/13.9
04-0120F4
ACBRIM-080-1(095)N

In the Special Provisions, Section 10-1.17, "ELECTRONIC MOBILE DAILY DIARY SYSTEM DATA DELIVERY," the fourth paragraph is revised as follows:

"The Contractor shall provide personnel and equipment information not later than 15 days prior to the start of work for its own personnel and equipment, and not later than 7 days before start of work by any subcontractor for the labor and equipment data of that subcontractor."

In the Special Provisions, Section 10-1.41, "SPHERICAL BUSHING BEARING (PIER E2)," subsection "MATERIALS," the sixth paragraph is revised as follows:

"Clean and paint spherical bushing bearing shall conform to the requirements in "Clean and Paint Structural Steel (Seismic Joint, Spherical Bushing Bearing, and Shear Key)," of these special provisions."

In the Special Provisions, Section 10-1.42, "FURNISH SPHERICAL BUSHING RING BEARING (HINGE K)," subsection "MATERIALS," the fourth paragraph is revised as follows:

"Clean and paint spherical bushing ring bearing shall conform to the requirements in "Clean and Paint Structural Steel (Seismic Joint, Spherical Bushing Bearing, and Shear Key)," of these special provisions."

In the Special Provisions, Section 10-1.43, "TOWER CROSS BRACING SPHERICAL BUSHING BEARING," subsection "MATERIALS," the third paragraph is revised as follows:

"Clean and paint tower cross bracing spherical bushing bearing shall conform to the requirements in "Clean and Paint Structural Steel (Seismic Joint, Spherical Bushing Bearing, and Shear Key)," of these special provisions."

In the Special Provisions, Section 10-1.44, "SHEAR KEY (PIER E2)," subsection "MATERIALS," the sixth paragraph is revised as follows:

"Clean and paint shear key shall conform to the requirements in "Clean and Paint Structural Steel (Seismic Joint, Spherical Bushing Bearing, and Shear Key)," of these special provisions."

In the Special Provisions, Section 10-1.461, "SEISMIC JOINT," is added as attached.

In the Special Provisions, Section 10-1.51, "STEEL STRUCTURES," subsection "ERECTION PLAN," in the sixth paragraph, the following new item is added:

"K. Complete details and substantiating calculations of the method and materials the Contractor proposes to use in prestressing high-strength bolts, including the method and sequence of stressing, working stresses and anchoring stresses."

04-SF-80-13.2/13.9
04-0120F4
ACBRIM-080-1(095)N

In the Special Provisions, Section 10-1.51, "STEEL STRUCTURES," subsection "FABRICATION," subsection "Prestressing High-Strength Bolts" is revised as follows:

"Prestressing High-Strength Bolts"

High-strength A354 bolts shall be tensioned by means of hydraulic jacks so that the force in the bolts shall not be less than the value shown on the plans.

The maximum temporary tensile stress (jacking stress) in high-strength bolts shall not exceed 75 percent of the specified minimum ultimate tensile strength of the material. Prestressing forces in high-strength bolts shall consider all losses, including creep of steel, losses due to sequence of stressing, and other losses specific to the method or system of prestressing used by the Contractor.

Hydraulic jacks used for prestressing high-strength bolts shall be calibrated in accordance with the requirements in Section 50-1.08, "Prestressing," of the Standard Specifications.

Final prestressing high strength A354 bolts at the tower anchorage shall be performed after the full dead load is transferred to the cable system."

In the Special Provisions, Section 10-1.51, "STEEL STRUCTURES," subsection "ASSEMBLY," subsection "Tower Lift Sections" is revised as follows:

"Tower lifts shall be in lengths as indicated on the plans. Exterior plates of the tower shafts shall be fabricated with direction of rolling aligned along the vertical direction of the tower. Within each lift, the number of transverse splices of the plates shall be minimized. Tower skin plate vertical seams shall be located a minimum of 100 mm away from longitudinal stiffeners unless otherwise shown on the plans. Each tower shaft segment shall be fabricated horizontally in a fixture so that all welds in the longitudinal direction of the tower shaft can be made in the horizontal or flat position. Welds between tower shaft segments shall be made in the horizontal or flat position. A full size template shall be used to control the tolerances between the tower shafts. A template is defined as a plate of a shaft that is used to produce identical cross-sections for the tower shafts.

The ends of each lift shall be milled to meet the dimensional requirements given under "Shop Welding," subsection "Design Details" of these special provisions. Each end shall be in a horizontal plane. When standing on its lower end, the top corners of each lift shall remain within specified limits in both horizontal directions. To limit cumulative displacements, ends of the higher lift shall be milled to compensate for the actual elevation of the lower lift, if the cumulative displacements are not within specified limits.

The fillet reinforcement required by Note 6 of Figures 2.4 and 2.5 of AWS D1.5 will not be required for PJP welds in the tower.

The tower interior corner splice plates shall be beveled 6 mm to clear weld beads on inside joint of tower corner skin plates subject to approval of the Engineer.

The ends of adjacent lifts shall be abutted together in the shop to ensure proper fit.

Tower struts shall be installed into their tower connections without inducing shear stresses. At the option of the Contractor, cross bracing and shear links may be used to obtain the required tolerances between shafts provided the axial loads in the cross bracing or shear links, after complete erection of tower, do not exceed 1 MN per member and the locked-in stresses along the entire length of each shaft does not exceed 5% of yield stress. The Contractor shall estimate the force and stresses in these members, including the locked-in stresses in each shaft after complete erection of tower, based on the approved erection plan and submit the calculations to the Engineer for review and approval. Bolt holes for the shear link connection plates may be field drilled subject to review and approval by the Engineer. The pin holes for the cross bracing may be bored in the shop to match field measurements subject to review and approval by the Engineer. The layout of the bolt holes shall be submitted to the Engineer for approval."

04-SF-80-13.2/13.9
04-0120F4
ACBRIM-080-1(095)N

In the Special Provisions, Section 10-1.51, "STEEL STRUCTURES," subsection "ASSEMBLY," subsection "Box Girder," the seventh paragraph is revised as follows:

"Wind pressure effects during erection shall be calculated using a gust wind appropriate to a return period of not less than 25 years and shall allow for variation of speed with height per ANSI ASCE 7-95. The 25-year wind corresponds to a 77 mph one-hour average wind speed (and a corresponding 3-second gust wind speed of 100 mph) at deck elevation of 50 meters, as well as a critical flutter wind speed threshold of 112 mph based on a 1000-year return period. The Contractor shall provide temporary connections between adjacent lift sections in order to ensure sufficient torsional stiffness of the suspended structure. The Contractor shall also provide the proper support of the suspended structure during all stages of erection. The Contractor shall similarly ensure control of tower deflections due to wind-induced oscillations at all stages of erection and shall provide holdback stays or other damping devices as necessary. All such temporary measures shall be approved by the Engineer."

In the Special Provisions, Section 10-1.51, "STEEL STRUCTURES," subsection "SHOP WELDING," subsection "General Provisions," Item E is revised as follows:

" E. Gas Metal Arc Welding (GMAW), but not with short-circuiting transfer, will be permitted only for tack welding of structural members."

In the Special Provisions, Section 10-1.51, "STEEL STRUCTURES," subsection "SHOP WELDING," subsection "Design Details," Item G "Dimensional Tolerances," under Item 4, Item K is revised as follows:

"K. The tolerance for the tower anchorage anchor bolt stiffeners is ± 3 mm."

In the Special Provisions, Section 10-1.51, "STEEL STRUCTURES," subsection "MEASUREMENT AND PAYMENT," the following paragraphs are added after the seventh paragraph:

"The contract price paid per kilogram for furnish structural steel (bridge) (saddle) shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in furnishing, fabricating and delivering structural steel to the job site, ready for erection, including furnishing all bolts, nuts and washers, tie-rods, studs, welding materials, and any other materials required for the erection and connection or splicing of the structural steel saddles and conforming to the qualification and testing requirements associated with saddle fabrication; as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The contract price paid per kilogram for erect structural steel (bridge) (saddle) shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in erecting the structural steel saddles, complete in place, including connecting and splicing the structural steel saddles; installing bolts; checking bolt tension; and conforming to qualification and testing requirements associated with member erection, connection or splicing; as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer."

04-SF-80-13.2/13.9
04-0120F4
ACBRIM-080-1(095)N

In the Special Provisions, Section 10-1.52, "CABLE SYSTEM," subsection "MATERIALS AND FABRICATION," subsection "Cable Wire," the second paragraph is revised as follows:

"Where the wire is manufactured from two or more rods joined by welding, the wire mill shall tension test the weld to demonstrate that the weld, after the wire drawing operation, develops mechanical properties consistent with the minimum specified strength and ductility for the wire. The wire mill shall produce test evidence from a minimum of 20 tests performed in the past attesting to the record of performance of the welding procedure. In addition, the Contractor shall conduct a minimum of three tests on welded joints on the drawn wire, using the proposed welding procedure. All three tests shall produce the minimum specified properties for yield strength, ultimate strength, percent elongation, and torsional ductility."

In the Special Provisions, Section 10-1.52, "CABLE SYSTEM," subsection "MATERIALS AND FABRICATION," subsection "Suspender Ropes," the first paragraph is revised as follows:

"Wire for suspender ropes shall conform to the requirements of ASTM Designation: A 603 with Class A galvanizing. The wire rope construction shall be 6x37 with an independent wire rope core (IWRC) or center fit rope core (CFRC). The wires within a suspender rope shall not be spliced. The suspender ropes shall have an ultimate tensile strength of not less than 1,350 N/mm² and shall be prestretched to obtain a modulus of elasticity not less than 138,000 N/mm². The prestretching test may be performed by the wire rope supplier. The wire rope supplier shall provide certified test results to show the required minimum modulus of elasticity has been achieved."

In the Special Provisions, Section 10-1.62, "CLEAN AND PAINT STRUCTURAL STEEL," is revised as attached.

In the Special Provisions, Section 10-1.63, "CLEAN AND PAINT STRUCTURAL STEEL (MODULAR JOINT SEAL ASSEMBLY, SPHERICAL BUSHING BEARING, AND SHEAR KEY)," is replaced with Section 10-1.63 "CLEAN AND PAINT STRUCTURAL STEEL (SEISMIC JOINT, SPHERICAL BUSHING BEARING, AND SHEAR KEY) as attached."

In the Proposal and Contract, in the Engineer's Estimate, Alternative 1 and Alternative 2, Items 163, 164, and 165 are added and Items 61, 62, 63, 64, 65, and 162 are deleted as attached.

To Proposal and Contract book holders:

Replace pages 31, 35A, 39, and 43A of the Engineer's Estimate in the Proposal with the attached revised pages 31, 35A, 39, and 43A of the Engineer's Estimate. The revised Engineer's Estimate is to be used in the bid.

Indicate receipt of this addendum by filling in the number of this addendum in the space provided on the signature page of the proposal.

Submit bids in the Proposal and Contract book you now possess. Holders who have already mailed their book will be contacted to arrange for the return of their book.

Inform subcontractors and suppliers as necessary.

Addendum No. 13
Page 7
September 26, 2003

04-SF-80-13.2/13.9
04-0120F4
ACBRIM-080-1(095)N

This office is sending this addendum by UPS overnight mail to Proposal and Contract book holders to ensure that each receives it.

If you are not a Proposal and Contract book holder, but request a book to bid on this project, you must comply with the requirements of this letter before submitting your bid.

Sincerely,

ORIGINAL SIGNED BY:

REBECCA D. HARNAGEL, Chief
Office of Plans, Specifications & Estimates
Office Engineer

Attachments

2-1.06 BIDDERS COMPENSATION

The Department recognizes the costs required to prepare bids for a project of this magnitude. To encourage competitive bids, within 90 days of award of the contract, the second and third low bidders shall each receive \$500,000 to defray a portion of the costs of providing a responsive bid.

Bidders whose bids are determined by the Department to be non-responsive or fail to execute the contract will not be eligible for bidder compensation.

Within 30 days of award of the contract, the Department will notify the Contractor of the identity of the recipients of the bidder compensation. The Contractor shall then make the necessary arrangements with the recipients in order to administer and pass-through the payment and provide proof of receipt to the Department in accordance with the payment provisions of Section 9-1.03B, "Work Performed by Special Forces or Other Special Services," of the Standard Specifications.

The Contractor shall be compensated for paying bidder compensation to the second and third low bidders in conformance with the provisions of Section 9-1.03B, "Work Performed by Special Forces or Other Special Services," of the Standard Specifications, except that 5 percent, in lieu of 15 percent, will be added to the invoice price. No additional mark ups will be allowed.

No separate payment will be made for the costs of providing a complete, responsible, and competitive bid in addition to that specified in this section "Bidders Compensation." Other unsuccessful bidders will not be compensated for their bids. If the Department rejects all bids and cancels the solicitation, no bidder will be provided compensation.

10-1.461 SEISMIC JOINT

Seismic joints shall consist of steel deck plates, channel assemblies, support plates, self-consolidating concrete, sealing elements, gutter, and anchorage components and shall be fabricated and installed at Hinges AW and AE in conformance with the details shown on the plans and as specified in the Standard Specifications and these special provisions.

Attention is directed to Section 10-1.08, "Cooperation," of these special provisions.

Unless otherwise directed by the Engineer, prior to submitting working drawings, the Contractor shall inspect the Hinge A blockouts in the adjacent Skyway Structures constructed by others in Contract No. 04-012024. The Contractor shall submit to the Engineer an inspection report for review and approval. This inspection report shall be titled "Skyway Blockouts Inspection Report" and shall include the actual blockout sizes; conditions of mechanical couplers, exposed reinforcement, and prestressing anchorages; potential interference with the blockout reinforcement and seismic anchorages shown on the plans; any conflicts with the details shown on the plans; and recommendations to resolve the conflicts. The Contractor shall allow the Engineer 10 working days to review and approve the "Skyway Blockouts Inspection Report."

WORKING DRAWINGS

The Contractor shall submit working drawings in conformance with the provisions in "Working Drawings" of these special provisions, and the requirements specified herein.

Working drawings shall include complete details, information, and drawings of the seismic joints and anchorage components and the method, materials, equipment, and procedures for fabrication and installation that the Contractor proposes to use.

Working drawing submittals shall include the following:

- A. Fabrication plans including all details, elevations, and sections of the seismic joint as shown on the plans. All dimensions and design tolerances shall be specified. Fabrication plans for the sizes of deck plates and support plates shall consider roadway super elevations and longitudinal gaps between the plates for sealing elements. Unless otherwise directed by the Engineer, fabrication plans shall conform to the actual blockout sizes and recommendations specified in the approved "Skyway Blockouts Inspection Report."
- B. All ASTM or other material designations.
- C. Sections showing all materials comprising the seismic joint with complete details of all individual components including welded splices and connections, welding procedures, and the measures to be taken to prevent steel plate from distortion due to the heat of traction welding.
- D. Joint installation plans including methods, materials, equipment, sequence, lifting mechanisms and locations, details of temporary anchorage during setting, temperature adjustment devices, method for maintaining full contact between deck plates and support plates during and after installation, installation details at curbs, seal installation details, and other procedures that the Contractor proposes to use for installation of the seismic joints.
- E. Self-consolidating concrete mix design and placement procedures. The Contractor's proposed self-consolidating concrete mix design submittals shall include test results for slump flow, slump flow time to a 500 mm diameter, stability of the concrete mixture, and compressive strengths at 7 and 28 days.
- F. Details and procedures of the mock-up construction to demonstrate self-consolidating concrete.
- G. List of coating system for seismic joints identifying cleaning and painting of all steel components as specified in "Clean and Paint Structural Steel (Seismic Joint, Spherical Bushing Bearing, and Shear Key)" of these special provisions.
- H. Anchorage components including concrete blockout details and any additions or rearrangements of the reinforcing steel from that shown on the plans.
- I. Storage plans for manufacture storage, interim storage, and on-site storage details including temporary support for the seismic joints.
- J. Shipping plans including handling of the seismic joints during transportation. Each shipment of the seismic joint materials shall be accompanied by a Certificate of Compliance in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications. The certificate shall state that the materials and fabrication involved comply in all respects to the specifications and data submitted in obtaining approval.

After complete working drawings are received by the Engineer, the Contractor shall allow the Engineer 20 working days to review the submittal. No fabrication of the seismic joint shall begin until complete working drawings are reviewed and approved, in writing, by the Engineer.

The final approval of the Contractor's mix design for self-consolidating concrete is contingent upon the successful mock-up construction as specified in "Demonstration Pours" herein.

MATERIALS

Attention is directed to "Welding" and "Audits" of these special provisions. Welding of seismic joint shall conform to AWS D1.5.

Structural steel shall conform to "Steel Structures" of these special provisions. Structural steel shall conform to the requirements of ASTM Designation: A 709M, Grade 345. Bolts, nuts and washers shall conform to the requirements of ASTM Designation: A 325 or A 325M and Section 75-1.03, "Miscellaneous Bridge Metal," of the Standard Specifications.

Sealing elements shall be 2 component silicone sealant that meets the requirements of Type A and AL seal in Section, 51-1.12F(3), "Materials and Installation," of the Standard Specifications. Sealing elements shall conform to the details shown on the plans and shall be continuous without splices.

Reinforcing steel shall conform to the provisions in "Reinforcement" of these special provisions.

Gutter shall conform to the provisions in "Miscellaneous Metal (Bridge)," of these special provisions.

Neoprene sheet shall conform to Section 51-1.145, "Strip Waterstops," of the Standard Specifications.

Elastomeric washers shall conform to the requirements specified in Section 51-1.12H(1), "Plain and Fabric Reinforced Elastomeric Bearing Pads," of the Standard Specifications.

Self-consolidating concrete shall be flowing concrete capable of spreading without segregation to a level state without the use of internal or external vibrators. Self-consolidating concrete shall conform to "Concrete Structures" of these special provisions and the requirements specified herein.

In addition to the chemical admixtures listed on the Department's current list of approved brands of admixtures that may be used, the Contractor may use a viscosity modifying admixture made by a chemical admixture manufacturer for the purpose of producing a self-consolidating concrete. The use of the viscosity modifying admixture shall be in accordance with the manufacturer's recommendations. The combined aggregate grading shall be any of the four maximum size grading limits specified in Section 90-3.04, "Combined Aggregate Gradings," of the Standard Specifications.

The Contractor's proposed mix design shall be pre-qualified for use in the demonstration pour by trial batch reports in conformance with Section 90-9, "Compressive Strength" of the Standard Specifications except that the consistency shall be measured by the slump flow test and bleeding shall be measured by ASTM Designation, C 232, Method A. The slump flow test shall conform to the requirements in ASTM Designation: C 143 except the following:

- A. The cone shall be filled in one lift without rodding. The cone shall be placed on a flat, moist, nonabsorbent, rigid base plate that is at least 700x700 mm. The base plate shall have concentric circle marks showing 200-mm and 500-mm diameter circles.
- B. Measure the time it takes for the concrete to reach 500 mm diameter circle. Report this as "Slump Flow Time" to the nearest 0.5 seconds.
- C. After the concrete ceases to flow, measure the diameter in 2 perpendicular directions. Report this as "Slump Flow" to the nearest 5 mm.
- D. Visually inspect the concrete spread to observe the distribution of coarse aggregate throughout the spread. Measure and record the radial width of any mortar ring without coarse aggregate. If no mortar ring without coarse aggregate exists, report as zero.

Consistency of the self-consolidating concrete shall be determined using the slump flow test method. The self-consolidating concrete shall have a minimum slump flow of 550 mm without segregation. The slump flow shall be selected by the Contractor based on the concrete constituent materials and placement procedures as specified in the approved working drawings.

The percent bleeding shall not exceed 1.5% when determined by ASTM Designation, C 232, Method A except that the container shall be filled in one lift without rodding.

Amendment to California Test 540

The following amendments to California Test 540, "Method of Making, Handling, and Storing Concrete Compressive Test Specimens in the Field," shall only apply to self-consolidating concrete. The Items "a" and "b" under "2. Test Specimen Fabrication" of "C. Preparation of Test Specimens" of California Test 540 shall be amended to read:

- a. Place test molds on a firm, flat surface to prevent distortion of the bottom surface. When more than one specimen is to be made from the same batch, make all specimens simultaneously. Fill the mold in one lift with a circular motion of the scoop to distribute the concrete evenly in the mold. Pat sides of the mold lightly by hand, or jig by rocking the mold from side to side.
- b. After the sides of the mold have been patted, strike off the surface of the concrete even with the top edge of the mold. Wipe the sides of the mold free of excess concrete and press the lid on to prevent evaporation.

Demonstration Pours

Prior to placing self-consolidating concrete, the Contractor shall construct at least one mock-up to demonstrate that the concrete will flow for the distance required by the proposed construction procedure. The placement of the self-consolidating concrete in the mock-up shall be witnessed by the Engineer.

The mock-up shall have a depth and length equal to that of the blockout detailed on the plans. The width of the mock-up shall be selected by the Contractor based on the distance that the concrete is required to flow according to the proposed construction procedure but shall not be less than 2 meters. The mock-up shall include concrete, reinforcement, and all concrete embedments as shown on the plans and approved working drawings, except that all reinforcement and embedments shall stop 300 mm from both longitudinal ends of the blockout so that concrete can be removed later and tested for segregation. The mock-up shall have a removable 27 mm plus or minus 3 mm thick transparent plastic top plate. The plastic top plate shall have vent holes of the same size and spacing as those in the support plate.

Acceptance criteria of the self-consolidating concrete shall be as follows:

- A. Self-consolidating concrete shall flow under the plastic top plate and shall completely fill the void in the blockout.
- B. After consolidation against the plastic top plate is verified, the Contractor shall remove the plastic top plate and shall take a sample of at least 45 kg of concrete from each end of the blockout to check for segregation by comparing coarse aggregate content with mix design values. The coarse aggregate content of each sample shall be determined using California Test 529 and shall not differ from the mix design value by more than 110 kg/m³.
- C. The percent bleeding shall not exceed 1.5% when determined by ASTM Designation, C 232, Method A except that the container shall be filled in one lift without rodding.

If the concrete fails to meet any of the acceptance criteria as determined by the Engineer, additional mock-ups shall be constructed at the Contractor's expense.

The mock-up shall not be part of the permanent structure and shall become the property of the Contractor. The mock-up shall be removed from the work site and shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

FABRICATION

The seismic joint shall be fabricated in conformance with the details, dimensions, material specifications, and procedures shown in the approved working drawings.

The surfaces between deck plates and support plates shall be in full contact. The contact surfaces between deck plates and support plates shall be within one millimeter in 300 mm and within 2 mm over the longest dimension of the plate.

All plate welds shall be ground smooth. The welds shall not protrude into the sliding surface of the deck plates or support plates.

Cleaning and painting of all new metal surfaces of the seismic joints, except where embedded in concrete, shall conform to the requirements specified in "Clean and Paint Structural Steel (Seismic Joint, Spherical Bushing Bearing, and Shear Key)" of these special provisions.

Damage to the seismic joint during shipping or handling shall be cause for rejection of the seismic joint.

Damage to the corrosion protection system shall be repaired to the satisfaction of the Engineer prior to installation.

INSTALLATION

Each seismic joint shall be installed in accordance with the approved working drawings.

The maximum gap between sliding surfaces shall not exceed 2 mm in any loaded or unloaded position. Rattling or any steel plate bouncing noise from the installed joints will not be permitted.

Each installed seismic joint shall match the finished roadway profile and grades as shown on the plans.

The Contractor shall protect the seismic joint from damage. The Contractor shall protect concrete blockouts and support systems from damage and construction traffic prior to installation of the seismic joints.

Sealing elements not fully bonded to the steel extrusions shall be replaced by the Contractor at the Contractor's expense.

The bridge deck surface shall conform to the provisions in "Epoxy Asphalt Concrete Surfacing" of these special provisions after installation of seismic joints.

MEASUREMENT AND PAYMENT

Seismic joints will be paid for on a lump sum basis.

The contract lump sum price paid for seismic joint at the locations listed in the Engineer's Estimate shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in fabricating, furnishing, transporting, storing, and installing the seismic joints, including self-consolidating concrete, bar reinforcing steel, neoprene sheets, gutter, anchorage components, mock-up construction, protecting, repairing, cleaning and painting, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Epoxy asphalt concrete will be measured and paid for separately as specified in "Epoxy Asphalt Concrete Surfacing" of these special provisions.

Bikepath expansion joints including cover plates will be measured and paid for separately as specified in "Steel Structures" of these special provisions.

Steel barrier will be measured and paid for separately as specified in "Steel Barrier" of these special provisions.

10-1.62 CLEAN AND PAINT STRUCTURAL STEEL

Exposed new metal surfaces, except where galvanized or metallized, shall be cleaned and painted in conformance with the provisions in Section 59-2, "Painting Structural Steel," and Section 91, "Paint," of the Standard Specifications and these special provisions. Exposed surfaces include all surfaces exposed to the atmosphere.

Whenever the Standard Specifications refer to "Steel Structures Painting Council," the reference shall be replaced with "SSPC: The Society for Protective Coatings."

Attention is directed to "Metallizing" of these special provisions for surface coating the inside of saddle troughs.

The Contractor shall provide suitable enclosures to permit cleaning and painting during inclement weather. Provisions shall be made to control atmospheric conditions inside the enclosures within limits suitable for cleaning throughout the cleaning operation, painting throughout the painting operation, drying throughout the drying period to solvent insolubility, and throughout the curing period per the manufacturers' recommendations and these special provisions. Full compensation for providing and maintaining such enclosures shall be considered as included in the prices paid for the various contract items of work requiring paint and no additional compensation will be allowed therefor.

No extension of contract time will be granted and no additional compensation will be allowed as a result of temperature or humidity which exceeds the limits for cleaning or painting designated herein, except as approved by the Engineer.

APPLICATION

Fresh, potable water with a maximum chloride content of 75 mg/L and a maximum sulfate content of 200 mg/L shall be used for water rinsing or pressure washing operations. Water shall be single use. No recycle of rinse water will be permitted. Water from water rinsing operations shall not be permitted to enter the bay, fall on public traffic, flow across shoulders or lanes occupied by public traffic, or to flow into gutter or other drainage facilities.

Prior to submitting the Painting Quality Work Plan (PQWP) required herein, a pre-painting meeting between the Engineer, the Contractor's QCM, a representative from each entity performing painting for this project, and a representative from the manufacturer to provide the paint, shall be held to discuss the requirements for the Painting Quality Work Plan.

Prior to performing any painting or paint removal, the Contractor shall submit to the Engineer, in conformance with the provisions in "Working Drawings," of these special provisions, 3 copies of a separate Painting Quality Work Plan (PQWP) for each item of work for which painting or paint removal is to be performed. As a minimum, each PQWP shall include the following:

- A. The name of each entity performing painting or paint removal.
- B. One copy each of all current "SSPC: The Society for Protective Coatings" specifications or qualification procedures, and one copy of all ASTM Standards which are applicable to the painting or paint removal to be performed. These documents shall become the property of the Department.
- C. A copy of the manufacturer's guidelines and recommendations for cleaning, painting, drying, curing, handling, shipping, and storage of the product.
- D. Proposed methods and equipment to be used for any paint application.
- E. Proof of each of any required certifications, SSPC-QP 1, SSPC-QP 2, SSPC-QP 3.
- F. Proposed methods to control environmental conditions in accordance with the manufacturer's recommendations and these special provisions.
- G. Proposed method to protect the product during curing, shipping, handling, and storage.
- H. For all finish coats, the PQWP shall contain the manufacturer's written recommendations on chloride testing methods, maximum allowable chloride levels, and surface preparation.
- I. A paint repair plan for the repair of damaged areas.

The Engineer shall have 14 calendar days to review the PQWP submittal after a complete plan has been received. No painting or paint removal shall be performed until the PQWP for that work is approved by the Engineer.

It is expressly understood that the Engineer's approval of the Contractor's PQWP shall not relieve the Contractor of any responsibility under the contract for the successful completion of the work in conformity with the requirements of the plans and specifications. The Engineer's review shall not constitute a waiver of any of the requirements of the plans and specifications nor relieve the Contractor of any obligation thereunder, and defective work, materials, and equipment may be rejected notwithstanding review of the PQWP.

CLEANING

Exposed new metal surfaces shall be dry blast cleaned in conformance with the requirements in Surface Preparation Specification No. 10, "Near White Blast Cleaning," of "SSPC: The Society for Protective Coatings." Blast cleaning shall leave surfaces with a dense, uniform, sharp angular anchor pattern of not less than 40 μm nor more than 86 μm as measured in conformance with the requirements in ASTM Designation: D 4417.

Mineral and slag abrasives used for blast cleaning steel shall conform to the requirements in Abrasive Specification No. 1, "Mineral and Slag Abrasives," of "SSPC: The Society for Protective Coatings" and shall not contain hazardous material. Mineral and slag abrasives shall comply with the requirements for Class A, Grade 2 to 3 as defined therein.

Steel abrasives used for blast cleaning steel surfaces shall comply with the requirements of SSPC-AB 3, "Newly Manufactured or Re-Manufactured Steel Abrasives" of "SSPC: The Society for Protective Coatings". If steel abrasive is recycled through shop or field abrasive blast cleaning units, the recycled abrasive shall conform to the requirements of SSPC-AB 2 "Specification for Cleanliness of Recycled Ferrous Metallic Abrasives" of "SSPC: The Society for Protective Coatings". The abrasive size and type shall be selected and maintained so as to achieve the required surface profile.

A Certificate of Compliance conforming to the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications and a Material Safety Data Sheet shall be furnished prior to use for each shipment of blast cleaning material for steel.

The inside surfaces of bolt holes shall be cleaned in conformance with the requirements in Surface Preparation Specification No. 1, "Solvent Cleaning," of the "SSPC: The Society for Protective Coatings," and visible rust shall be removed.

MATERIAL ANOMALIES

Corners shall be rounded to a minimum radius of 2mm.

Preparation of Thermal Cut Edges – Thermal cut edges (TCEs) to be painted shall be conditioned before blast cleaning, if necessary, to achieve proper profile.

Edge conditioning is defined as very shallow grinding or other pre-blast cleaning preparation of thermal cut edges (TCEs) to remove a thin, hardened layer left by resolidification.

Base Metal Surface Irregularities – All visually evident surface defects shall be removed in accordance with ASTM A 6 or AASHTO M 160 prior to blast cleaning steel. When material defects exposed by blast cleaning are removed, the blast profile must be restored by either blast cleaning or by using mechanical tools in accordance with SSPC-SP 11.

PAINTING

Blast cleaned surfaces shall receive a single undercoat and, unless otherwise specified, a minimum of 2 finish coats of an exterior grade latex paint supplied by the manufacturer of the inorganic zinc coating. The surface of the undercoat or the topcoat that is to be covered shall be free from moisture, visible dust, visible grease, or other deleterious materials.

The single undercoat shall consist of an inorganic zinc coating conforming to the requirements in AASHTO Designation M 300, Type I- or Type II, except that: 1) the first 3 sentences of Section 5.6, "Primer Field Performance Requirements," shall not apply for Type II coatings and the entire Section 5.6.1 shall not apply for either type of inorganic zinc coating.

If the Contractor proposes a Type I coating, the Contractor shall furnish to the Engineer for approval documentation as required in Section 5.6 of AASHTO Designation M300. The Contractor shall allow the Engineer 30 working days to review the proposal.

If the Contractor proposes to use a type II coating, the coating shall be chosen from the qualified products list, which may be obtained from the Transportation Laboratory.

The inside surfaces of bolt holes shall be painted with one application of a zinc rich primer (organic vehicle type) after the application of the undercoat of inorganic zinc on adjacent steel. Finish coats are not required for the inside surfaces of bolt holes.

Inorganic zinc coating shall be used within 12 hours of initial mixing.

Application of inorganic zinc coating shall conform to the provisions for applying zinc-rich coating in Section 59-2.13, "Application of Zinc-Rich Primer," of the Standard Specifications.

Inorganic zinc coating shall not be applied when the atmospheric or surface temperature is less than 7°C nor more than 29°C, nor when the relative humidity exceeds 85 percent.

The single undercoat of inorganic zinc coating shall be applied to the required dry film thickness in 2 or more applications within 4 hours after blast cleaning.

The total dry film thickness of all applications of the inorganic zinc undercoat, including the surfaces of outside existing members within the grip under bolt heads, nuts and washers, shall be not less than 90 µm nor more than 150 µm, except that the total dry film thickness on each faying (contact) surface of high strength bolted connections shall be between 25 µm and the maximum allowable dry film thickness for Class B coatings as determined by certified testing in conformance with Appendix A of the "Specification for Structural Joints Using ASTM A325 or A490 Bolts" of the Research Council on Structural Connections (RCSC Specification). Unless otherwise stated, all inorganic zinc coatings used on faying surfaces shall meet the slip coefficient requirements for a Class B coating on blast-cleaned steel, as specified in the RCSC Specification. The Contractor shall provide results of certified testing showing the maximum allowable dry film thickness for the Class B coating from the qualifying tests for the coating he has chosen, and shall maintain the coating thickness on actual faying surfaces of the structure at or below this maximum allowable coating thickness.

Areas where mudcracking occurs in the inorganic zinc coating shall be blast cleaned and repainted with inorganic zinc coating to the specified thickness.

Dry spray, or overspray, as defined in the Steel Structures Painting Manual, Volume 1, "Good Painting Practice," of the "SSPC: The Society for Protective Coatings," shall be removed prior to application of subsequent coats or final acceptance. Removal of dry spray shall be by screening or other methods that minimize polishing of the inorganic zinc surface. The dry film thickness of the coating after removal of dry spray shall be in conformance with the provisions for applying the single undercoat, as specified herein.

The inorganic zinc coating shall be tested for adhesion and chlorides. Additional testing as defined in this section shall also be required for water borne inorganic zinc and solvent borne inorganic zinc primers. The Engineer will determine the locations of the tests. The Contractor shall determine the sequence of the rinsing and testing operations. The testing for adhesion will be performed no sooner than 72 hours after application of the single undercoat of inorganic zinc coating. At the Contractor's expense, satisfactory access shall be provided to allow the Engineer to determine the location of the tests.

The following tests shall be performed on both water borne inorganic zinc primers and solvent borne inorganic zinc primers:

- 1. Adhesion**

The inorganic zinc coating shall have a minimum adhesion to steel of 4 MPa. Testing shall be performed at a minimum frequency of 1 test per 100 square meters of painted area using a self-aligning adhesion tester in conformance with the requirements in ASTM Designation: D 4541. The Contractor, at the Contractor's expense, shall: (1) verify compliance with the adhesion requirements, (2) furnish test results to the Engineer, and (3) repair the coating after testing.

- 2. Chlorides and Water Rinsing**

Except as approved by the Engineer, a minimum time of 72 hours shall be allowed between application of inorganic zinc coating and water rinsing.

All areas of inorganic zinc coating, where finish coats are specified, shall be water rinsed in conformance with the requirements in Section 59-1.03 "Application," of the Standard Specifications and these special provisions. Areas of the coating that are removed by the water rinsing shall be reapplied in conformance with the provisions for applying zinc-rich coating in Section 59-2.13, "Application of Zinc-Rich Primer," of the Standard Specifications and these special provisions.

All areas of inorganic zinc coating where finish coats are to be applied shall be tested by the Contractor for soluble salts in conformance with the requirements in SSPC: The Society for Protective Coatings Technical Update No. 4, "Field Methods for Retrieval and Analysis of Soluble Salts on Substrates" and cleaned, if necessary, so that the maximum level of chlorides does not exceed the lesser of the manufacturer's written recommendations or 10 micrograms per square centimeter. Areas of inorganic zinc coating shall be tested for chlorides at the rate of one test per 200 square meters or part thereof at locations chosen by the Engineer. If chloride levels exceed the maximum allowed by these special provisions, the entire 200 square meter area represented by the testing will be rejected. The Contractor shall perform additional cleaning and testing of rejected areas until chloride levels conform to these requirements.

Finish coats shall be applied to areas passing the chloride tests within 48 hours.

Additional Requirements for Water Borne Inorganic Zinc Primers

1. Steel painted with water borne inorganic zinc primer shall be protected at all times from water immersion conditions during curing, shipping, and storage until the surface pH, measured as described herein, is less than 8, and until the coating passes the solvent insolubility test described below. Water immersion conditions are defined as standing water or continuous contact with wet materials for periods in excess of 30 minutes. The Contractor, at the Contractor's expense, shall repair damage caused due to immersion conditions by blast cleaning and repainting with inorganic zinc coating to the specified thickness.
2. The surface pH of the inorganic zinc primer shall be tested by wetting the surface with de-ionized water for a minimum of 15 minutes and no longer than 30 minutes and applying pH paper with a capability of measuring in increments of 0.5 pH units. At least two surface pH readings shall be taken for each 50 square meters or portion thereof. If less than 50 square meters of steel is coated in a single shift or day, at least two surface pH readings shall be taken for primer applied during that period. Application of finish coats will not be permitted until the surface pH is less than 8.
3. Dry to solvent insolubility for water borne inorganic zinc primers shall be determined in conformance with the requirements in ASTM Designation: D4752, "Standard Test Method for Measuring MEK Resistance of Ethyl Silicate (Inorganic) Zinc-Rich Primers by Solvent Rub" except that water shall be the solvent. The resistance rating shall not be less than 4. Areas of inorganic zinc coating shall be tested for solvent insolubility at the rate of one test per 50 square meters or portion thereof. Inorganic zinc coating that does not meet the solvent insolubility requirement shall be repaired by the Contractor, at the Contractor's expense, by blast cleaning and repainting with inorganic zinc coating to the specified thickness.

Additional Requirements for Solvent Borne Inorganic Zinc Primers

1. Dry to solvent insolubility for solvent borne inorganic zinc primers shall be determined in conformance with the requirements in ASTM Designation: D4752, "Standard Test Method for Measuring MEK Resistance of Ethyl Silicate (Inorganic) Zinc-Rich Primers by Solvent Rub." The resistance rating shall not be less than 4. Areas of inorganic zinc coating shall be tested for solvent insolubility at the rate of one test per 50 square meters or portion thereof. Inorganic zinc coating that fails to meet the solvent insolubility requirement shall be repaired by the Contractor, at the Contractor's expense, by blast cleaning and repainting with inorganic zinc coating to the specified thickness. The Contractor shall maintain suitable enclosures to protect the inorganic zinc coating from damage caused by the environment until the coating passes this test and is fully cured per the manufacturer's written recommendations.

Except as noted, exterior surfaces of undercoated areas and bolts shall receive a minimum of 2 finish coats of an exterior grade latex paint supplied by the manufacturer of the inorganic zinc coating. Exterior surfaces are defined as steel surfaces undercoated with inorganic zinc, which are visible in the finished work from the outside of the bridge.

Finish coats will not be required on exterior surfaces receiving an overlay.

Finish coats are not required on interior surfaces. Interior surfaces are defined as steel surfaces undercoated with inorganic zinc not visible from the outside of the bridge and include, but are not limited to, the inside surfaces of the box girder, crossbeams and tower shafts.

At the Contractor's option, the first finish coat shall be applied in accordance with one of the following two methods:

1. Field applied within 48 hours following water rinsing, verification of compliance with the surface pH requirement if applicable, compliance with applicable solvent insolubility requirements, and passing the chloride testing as specified previously in this section.
2. Shop coated after meeting the finish coat manufacturer's recommendations for preparation of primed surfaces for finish painting, verification of compliance with the surface pH requirement if applicable, compliance with applicable solvent insolubility requirements, and passing the chloride testing as specified previously in this section.

The final finish coat shall be field applied within 48 hours following water rinsing and passing the chloride testing as specified previously in this section.

The finish coat paint shall be formulated for application to inorganic zinc coating and shall conform to the following:

A.

Property	Value	ASTM Designation
Pigment content, percent	24 max.	D 3723
Nonvolatile content, mass percent	49 min.	D 2369
Viscosity, KU	75 min. to 90 max.	D 562
Fineness of dispersion, Hegman	6 min.	D 1210
Drying time at 25°C, 50% RH, 100-µm wet film		D 1640
Set to touch, minutes	30 max.	
Dry through, hours	1 max.	
Adhesion	4A	D 3359, Procedure A

B. No visible color change in the finish coats shall occur when tested in conformance with the requirements in ASTM Designation: D 4587 for a minimum of 38 cycles.

C. The vehicle shall be an acrylic or modified acrylic copolymer with a minimum of necessary additives.

The first finish coat shall be applied in 2 applications. The first application shall consist of a spray applied mist application. The second application shall be applied after the mist application has dried to a set to touch condition as determined by the procedure described in Section 7 of ASTM Designation: D1640. The first finish coat color shall match Federal Standard 595B No. 36628. The total dry film thickness of both applications of the first finish coat shall be not less than 50 µm.

Except as approved by the Engineer, a minimum drying time of 12 hours shall be allowed between finish coats.

The second finish coat color shall match Federal Standard 595B, No. 26408. The total dry film thickness of the applications of the second finish coat shall be not less than 50 µm.

The 2 finish coats shall be applied in 3 or more applications to a total dry film thickness of not less than 100 µm nor more than 200 µm.

The total dry film thickness of all applications of inorganic zinc coating and finish coat paint shall be not less than 190 µm nor more than 350 µm.

PAYMENT

Payment for clean and paint structural steel shall conform to the provisions in Section 59-2.16, "Payment," of the Standard Specifications and these special provisions.

Cleaning and painting structural steel, of the types listed in the Engineer's Estimate, will be paid for on the basis of lump sum price.

Full compensation for water rinsing and conforming to the requirements for testing outlined in these special provisions, including providing access for testing and repairing painted surfaces, shall be considered as included in the contract lump sum price paid for clean and paint structural steel of the types listed in the Engineer's Estimate and no additional compensation will be allowed therefor.

10-1.63 CLEAN AND PAINT STRUCTURAL STEEL (SEISMIC JOINT, SPHERICAL BUSHING BEARING, AND SHEAR KEY)

Clean and paint structural steel in this section shall consist of cleaning and painting the following structural steel components:

- A. Seismic Joint
- B. Spherical Bushing Bearing at Pier E2
- C. Shear Key at Pier E2
- D. Spherical bushing ring bearing at Hinge K

Exposed new metal surfaces, except where galvanized, shall be cleaned and painted in conformance with the provisions in Section 59-2, "Painting Structural Steel," and Section 91, "Paint," of the Standard Specifications and these special provisions.

Prior to submitting the Painting Quality Work Plan (PQWP) required herein, a pre-painting meeting between the Engineer, the Contractor's QCM, a representative from each entity performing painting for this project, and a representative from the manufacturer to provide the paint, shall be held to discuss the requirements for the Painting Quality Work Plan.

Prior to performing any painting or paint removal, the Contractor shall submit to the Engineer, in conformance with the provisions in Section "Working Drawings," elsewhere in these special provisions, 3 copies of a separate Painting Quality Work Plan (PQWP) for each item of work for which painting or paint removal is to be performed. As a minimum, each PQWP shall include the following:

- A. The name of each Contractor or subcontractor to be used.
- B. One copy each of all current "SSPC: The Society for Protective Coatings" specifications or qualification procedures, and one copy of all ASTM Standards which are applicable to the painting or paint removal to be performed. These documents shall become the permanent property of the Department.
- C. A copy of the manufacturer's guidelines and recommendations for cleaning, painting, drying, curing, handling, shipping, and storage of the product.
- D. Proposed methods and equipment to be used for any paint application.
- E. Proof of each of any required certifications, SSPC-QP 1, SSPC-QP 2, SSPC-QP 3.
- F. Proposed methods to control environmental conditions in accordance with the manufacturer's recommendations and these special provisions.
- G. Proposed method to protect the product during curing, shipping, handling, and storage.
- H. A paint repair plan for the repair of damaged areas.

The Engineer shall have 10 working days to approve the PQWP submittal after a complete plan has been received. No painting or paint removal shall be performed until the PQWP for that work is approved by the Engineer. Should the Engineer fail to complete the review within this time allowance and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the delay in reviewing the PQWP, the delay will be considered a right of way delay in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

Conformance with the requirements in SSPC-QP 1, SSPC-QP 2, and SSPC-QP 3 of the "SSPC: The Society for Protective Coatings" will not be required for seismic joint.

CLEANING

Exposed new metal surfaces shall be dry blast cleaned in conformance with the requirements in Surface Preparation Specification No. 10, "Near White Blast Cleaning," of the "SSPC: The Society for Protective Coatings." Blast cleaning shall leave surfaces with a dense, uniform, sharp, angular anchor pattern of not less than 40 μm nor more than 86 μm as measured in conformance with the requirements in ASTM Designation: D 4417.

Mineral and slag abrasives used for blast cleaning steel shall conform to the requirements in Abrasive Specification No. 1, "Mineral and Slag Abrasives," of the "SSPC: The Society for Protective Coatings" and shall not contain hazardous material. Mineral and slag abrasives shall comply with the requirements for Class A, Grade 2 to 3 as defined therein.

Steel abrasives used for blast cleaning steel surfaces shall comply with the requirements of SSPC-AB 3, "Newly Manufactured or Re-Manufactured Steel Abrasives" of "SSPC: The Society for Protective Coatings". If steel abrasive is recycled through shop or field abrasive blast cleaning units, the recycled abrasive shall conform to the requirements of SSPC-AB 2 "Specification for Cleanliness of Recycled Ferrous Metallic Abrasives" of "SSPC: The Society for Protective Coatings". The abrasive size and type shall be selected and maintained so as to achieve the required surface profile.

A Certificate of Compliance conforming to the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications and a Material Safety Data Sheet shall be furnished prior to use for each shipment of blast cleaning material for steel.

MATERIAL ANOMALIES

Corners shall be rounded to a minimum radius of 2mm..

Preparation of Thermal Cut Edges – Thermal cut edges (TCEs) to be painted shall be conditioned before blast cleaning, if necessary, to achieve proper profile.

Edge conditioning is defined as very shallow grinding or other pre-blast cleaning preparation of thermal cut edges (TCEs) to remove a thin, hardened layer left by resolidification

Base Metal Surface Irregularities – All visually evident surface defects shall be removed in accordance with ASTM A 6 or AASHTO M 160 prior to blast cleaning steel. When material defects exposed by blast cleaning are removed, the blast profile must be restored by either blast cleaning or by using mechanical tools in accordance with SSPC-SP 11.

PAINTING

Blast cleaned surfaces shall receive a single undercoat, and a final coat where specified of an inorganic zinc coating conforming to the requirements in AASHTO Designation M 300, Type I- or Type II, except that: 1) the first 3 sentences of Section 5.6, "Primer Field Performance Requirements," shall not apply for Type II coatings and the entire Section 5.6.1 shall not apply for either type of inorganic zinc coating.

If the Contractor proposes a Type I coating, the Contractor shall furnish to the Engineer for approval documentation as required in Section 5.6 of AASHTO Designation M300. The Contractor shall allow the Engineer 30 working days to review the proposal.

If the Contractor proposes to use a Type II coating, the coating shall be chosen from the qualified products list, which may be obtained from the Transportation Laboratory.

The inside surfaces of bolt holes shall be painted with one application of a zinc rich primer (organic vehicle type) after the application of the undercoat of inorganic zinc on adjacent steel. Finish coats are not required for the inside surfaces of bolt holes.

Inorganic zinc coating shall be used within 12 hours of initial mixing.

Application of inorganic zinc coating shall conform to the provisions for applying zinc-rich coating in Section 59-2.13, "Application of Zinc-Rich Primer," of the Standard Specifications.

Inorganic zinc coating shall not be applied when the atmospheric or surface temperature is less than 7°C nor more than 29°C, nor when the relative humidity exceeds 85 percent.

The single undercoat of inorganic zinc coating shall be applied to the required dry film thickness in 2 or more applications within 4 hours after blast cleaning.

The total dry film thickness of all applications of the inorganic zinc undercoat, including the surfaces of outside existing members within the grip under bolt heads, nuts and washers, shall be not less than 90 µm nor more than 150 µm, except that the total dry film thickness on each faying (contact) surface of high strength bolted connections shall be between 25 µm and the maximum allowable dry film thickness for Class B coatings as determined by certified testing in conformance with Appendix A of the "Specification for Structural Joints Using ASTM A325 or A490 Bolts" of the Research Council on Structural Connections (RCSC Specification). Unless otherwise stated, all inorganic zinc coatings used on faying surfaces shall meet the slip coefficient requirements for a Class B coating on blast-cleaned steel, as specified in the RCSC Specification. The Contractor shall provide results of certified testing showing the maximum allowable dry film thickness for the Class B coating from the qualifying tests for the coating he has chosen, and shall maintain the coating thickness on actual faying surfaces of the structure at or below this maximum allowable coating thickness.

Areas where mudcracking occurs in the inorganic zinc coating shall be blast cleaned and repainted with inorganic zinc coating to the specified thickness.

Dry spray, or overspray, as defined in the Steel Structures Painting Manual, Volume 1, "Good Painting Practice," of the "SSPC: The Society for Protective Coatings," shall be removed prior to application of subsequent coats or final acceptance. Removal of dry spray shall be by screening or other methods that minimize polishing of the inorganic zinc surface. The dry film thickness of the coating after removal of dry spray shall be in conformance with the provisions for applying the single undercoat, as specified herein.

The inorganic zinc coating shall be tested for adhesion. Additional testing as defined in this section shall also be required for water borne inorganic zinc and solvent borne inorganic zinc primers. The locations of the tests will be determined by the Engineer. The sequence of the rinsing and testing operations shall be determined by the Contractor. The testing for adhesion will be performed no sooner than 72 hours after application of the single undercoat of inorganic zinc coating. At the Contractor's expense, satisfactory access shall be provided to allow the Engineer to determine the location of the tests.

The following test shall be performed on both water borne inorganic zinc primers and solvent borne inorganic zinc primers:

Adhesion

The inorganic zinc coating shall have a minimum adhesion to steel of 4 MPa. Testing shall be performed at a minimum frequency of 1 test per 100 square meters of painted area using a self-aligning adhesion tester in conformance with the requirements in ASTM Designation: D 4541. The Contractor, at the Contractor's expense, shall: (1) verify compliance with the adhesion requirements, (2) furnish test results to the Engineer, and (3) repair the coating after testing.

Additional Requirements for Water Borne Inorganic Zinc Primers

1. Steel painted with water borne inorganic zinc primer shall be protected at all times from water immersion conditions during curing, shipping, and storage until the surface pH, measured as described herein, is less than 8, and until the coating passes the solvent insolubility test described below. Water immersion conditions are defined as standing water or continuous contact with wet materials for periods in excess of 30 minutes. The Contractor, at the Contractor's expense, shall repair damage caused due to immersion conditions by blast cleaning and repainting with inorganic zinc coating to the specified thickness.
2. The surface pH of the inorganic zinc primer shall be tested by wetting the surface with de-ionized water for a minimum of 15 minutes and no longer than 30 minutes and applying pH paper with a capability of measuring in increments of 0.5 pH units. At least two surface pH readings shall be taken for each 50 square meters or portion thereof. If less than 50 square meters of steel is coated in a single shift or day, at least two surface pH readings shall be taken for primer applied during that period. Application of finish coats will not be permitted until the surface pH is less than 8.
3. Dry to solvent insolubility for water borne inorganic zinc primers shall be determined in conformance with the requirements in ASTM Designation: D4752, "Standard Test Method for Measuring MEK Resistance of Ethyl Silicate (Inorganic) Zinc-Rich Primers by Solvent Rub" except that water shall be the solvent. The resistance rating shall not be less than 4. Areas of inorganic zinc coating shall be tested for solvent insolubility at the rate of one test per 50 square meters or portion thereof. Inorganic zinc coating that does not meet the solvent insolubility requirement shall be repaired by the Contractor, at the Contractor's expense, by blast cleaning and repainting with inorganic zinc coating to the specified thickness.

Additional Requirements for Solvent Borne Inorganic Zinc Primers

1. Dry to solvent insolubility for solvent borne inorganic zinc primers shall be determined in conformance with the requirements in ASTM Designation: D4752, "Standard Test Method for Measuring MEK Resistance of Ethyl Silicate (Inorganic) Zinc-Rich Primers by Solvent Rub." The resistance rating shall not be less than 4, "Burnished appearance in rubbed area; slight amount of zinc on cloth after 50 double rubs." The Contractor shall maintain suitable enclosures to protect the inorganic zinc coating from damage caused by the environment until the coating passes this test and is fully cured per the manufacturer's written recommendations.

The color of the final application of inorganic zinc coating shall match Federal Standard 595B No. 36373.

The final coat of inorganic zinc coating shall be applied after testing for adhesion, testing for solvent insolubility, and completion of all operations that may damage or discolor the steel surface, including correction of runs, sags, thin and excessively thick areas in the paint film, skips and holidays, dry spray, or areas of non-uniform appearance.

The area to receive the final coat of inorganic zinc coating shall be lightly roughened by abrasive blasting using an abrasive no larger than 600 μm . Abrasive blasting shall remove no more than 15 μm of inorganic zinc. The surface to be lightly roughened shall be free from moisture, dust, grease or deleterious material. The undercoated areas of the under surfaces of bottom flanges shall be protected from abrasive blast cleaning operations.

The final coat of inorganic zinc coating shall be applied to the required dry film thickness in one uniform application within 24 hours after light roughening. The dry film thickness of the final coat shall be not less than 25 μm nor more than 75 μm .

Except at bolted connections, the total dry film thickness of all applications of the single undercoat and final coat of inorganic zinc coating shall be not less than 115 μm nor more than 225 μm .

Finish coats will not be required.

PAYMENT

Full compensation for clean and paint structural steel for seismic joint shall be considered as included in the contract lump sum price paid for seismic joint of the types and locations listed in the Engineer's Estimate and no separate payment will be made therefor.

Full compensation for clean and paint structural steel for spherical bushing bearing at Pier E2 shall be considered as included in the contract unit price paid for furnish and install spherical bushing bearing (Pier E2) and no separate payment will be made therefor.

Full compensation for clean and paint structural steel for shear key at Pier E2 shall be considered as included in the contract unit price paid for furnish and install shear key (Pier E2) and no separate payment will be made therefor.

Full compensation for clean and paint structural steel for spherical bushing ring bearing at Hinge K shall be considered as included in the contract unit price paid for furnish spherical bushing ring bearing (Hinge K) and no separate payment will be made therefor.

ENGINEER'S ESTIMATE**04-0120F4****ALTERNATIVE 1**

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
61	BLANK					
62	BLANK					
63	BLANK					
64 (S)	BLANK					
65	BLANK					
66 (S-F)	520102	BAR REINFORCING STEEL (BRIDGE)	KG	1 410 000		
67 (S-F)	520110	BAR REINFORCING STEEL (EPOXY COATED) (BRIDGE)	KG	140 370		
68 (F)	550203	FURNISH STRUCTURAL STEEL (BRIDGE)	KG	183 000		
69 (F)	550204	ERECT STRUCTURAL STEEL (BRIDGE)	KG	183 000		
70 (F)	049314	FURNISH STRUCTURAL STEEL (BRIDGE)(TOWER)	KG	13 100 000		
71 (F)	049315	ERECT STRUCTURAL STEEL (BRIDGE)(TOWER)	KG	13 100 000		
72 (F)	049316	FURNISH STRUCTURAL STEEL (BRIDGE)(TOWER STRUT)	EA	68		
73 (F)	049317	FURNISH STRUCTURAL STEEL (BRIDGE) (BOX GIRDER)	KG	28 800 000		
74 (F)	049318	ERECT STRUCTURAL STEEL (BRIDGE) (BOX GIRDER)	KG	28 800 000		
75 (F)	049319	FURNISH STRUCTURAL STEEL (BRIDGE) (BIKEPATH)	KG	1 275 000		
76 (F)	049320	ERECT STRUCTURAL STEEL (BRIDGE) (BIKEPATH)	KG	1 220 000		
77 (S-F)	049321	FURNISH STRUCTURAL STEEL (BRIDGE) (SADDLE)	KG	1 130 000		
78 (F)	049322	ERECT STRUCTURAL STEEL (BRIDGE)(SADDLE)	KG	1 130 000		
79 (S-F)	049323	FURNISH AND INSTALL SHEAR KEY (PIER E2)	EA	2		
80 (F)	049324	FURNISH STRUCTURAL STEEL (BRIDGE) (PIPE BEAM)	KG	260 000		

**ALTERNATIVE 1
04-0120F4**

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
161	031526	SAS SUPERSTRUCTURE ROADYWAY WESTBOUND	LS	LUMP SUM	LUMP SUM	
162	BLANK					
163 (S)	049349	SEIMIC JOINT (HINGE AW)	LS	LUMP SUM	LUMP SUM	
164 (S)	049350	SEIMIC JOINT (HINGE AE)	LS	LUMP SUM	LUMP SUM	
165	999990	MOBILIZATION	LS	LUMP SUM	LUMP SUM	

TOTAL BID (A)(ALTERNATIVE 1): _____

TOTAL BID (B)(ALTERNATIVE 1):

\$50,000.00 x _____

(Cost Per Day) **(Enter Working Days Bid)**
(Not To Exceed 1800 Days)

**TOTAL BASIS FOR COMPARISON
OF BIDS: (A + B)(ALTERNATIVE 1):**
FOREIGN STEEL AND IRON ALTERNATIVE

**ALTERNATIVE 2
04-0120F4**

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
61	BLANK					
62	BLANK					
63	BLANK					
64 (S)	BLANK					
65	BLANK					
66 (S-F)	520102	BAR REINFORCING STEEL (BRIDGE)	KG	1 410 000		
67 (S-F)	520110	BAR REINFORCING STEEL (EPOXY COATED) (BRIDGE)	KG	140 370		
68 (F)	550203	FURNISH STRUCTURAL STEEL (BRIDGE)	KG	183 000		
69 (F)	550204	ERECT STRUCTURAL STEEL (BRIDGE)	KG	183 000		
70 (F)	049314	FURNISH STRUCTURAL STEEL (BRIDGE)(TOWER)	KG	13 100 000		
71 (F)	049315	ERECT STRUCTURAL STEEL (BRIDGE)(TOWER)	KG	13 100 000		
72 (F)	049316	FURNISH STRUCTURAL STEEL (BRIDGE)(TOWER STRUT)	EA	68		
73 (F)	049317	FURNISH STRUCTURAL STEEL (BRIDGE) (BOX GIRDER)	KG	28 800 000		
74 (F)	049318	ERECT STRUCTURAL STEEL (BRIDGE) (BOX GIRDER)	KG	28 800 000		
75 (F)	049319	FURNISH STRUCTURAL STEEL (BRIDGE) (BIKEPATH)	KG	1 275 000		
76 (F)	049320	ERECT STRUCTURAL STEEL (BRIDGE) (BIKEPATH)	KG	1 220 000		
77 (S-F)	049321	FURNISH STRUCTURAL STEEL (BRIDGE) (SADDLE)	KG	1 130 000		
78 (F)	049322	ERECT STRUCTURAL STEEL (BRIDGE)(SADDLE)	KG	1 130 000		
79 (S-F)	049323	FURNISH AND INSTALL SHEAR KEY (PIER E2)	EA	2		
80 (F)	049324	FURNISH STRUCTURAL STEEL (BRIDGE) (PIPE BEAM)	KG	260 000		

**ALTERNATIVE 2
04-0120F4**

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
161	031526	SAS SUPERSTRUCTURE ROADYWAY WESTBOUND	LS	LUMP SUM	LUMP SUM	
162	BLANK					
163 (S)	049349	SEIMIC JOINT (HINGE AW)	LS	LUMP SUM	LUMP SUM	
164 (S)	049350	SEIMIC JOINT (HINGE AE)	LS	LUMP SUM	LUMP SUM	
165	999990	MOBILIZATION	LS	LUMP SUM	LUMP SUM	

TOTAL BID (A)(ALTERNATIVE 2): _____

TOTAL BID (B)(ALTERNATIVE 2):

\$50,000.00

x

(Cost Per Day)

(Enter Working Days Bid)

(Not To Exceed 1800 Days)

TOTAL BASIS FOR COMPARISON

OF BIDS: (A + B)(ALTERNATIVE 2):

DOMESTIC STEEL AND IRON ALTERNATIVE